REMARKS

Claims 1-13 and 16-40 are currently pending in the subject application and are presently under consideration. Claims 16-18 have been amended as shown on p. 4 of the Reply. The amendments do not add any new subject matter or initiate a new search as conveyed to the Examiner on November 4, 2008 and thus it respectfully requested that they be entered. Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 16-18 Under 35 U.S.C §112

Claims 16-18 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 16-18 have been amended to depend from claim 13. Accordingly, the rejection is moot in view of the amendments.

II. Rejection of Claims 1-8 and 27-40 Under 35 U.S.C. §102(e)

Claims 1-8 and 27-40 stand rejected under 35 U.S.C. §102(e) as being anticipated by Combs, *et al.* (US 6,766,348). It is respectfully submitted that this rejection is improper for at least the following reasons. Combs, *et al.* fails to disclose or suggest all limitations set forth in the subject claims.

> A single prior art reference anticipates a patent claim only if it *expressly or inherently describes each and every limitation set forth in the patent claim*. *Trintec Industries, Inc. v. Top-U.S.A. Corp.,* 295 F.3d 1292, 63 USPQ2d 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The *identical invention must be shown in as complete detail as is contained in the … claim. Richardson v. Suzuki Motor Co.,* 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (emphasis added).

Applicants' claimed subject matter relates to a system that represents resources as services comprising a designation primitive, a behavioral primitive that includes a unilateral contract, and a communication primitive. The system further comprises a decentralized operating system for orchestrating the services executing on the computer system so as to control and coordinate resources. Specifically, resources such as, devices, content, applications, and/or

people are abstracted as autonomous computation entities called services that exchange messages according to protocols defined by each service. More specifically, a composition of services can be formed to represent a resource. In particular, independent claim 1 recites *services for representing a resource, each service coupled to a decentralized operating system is an autonomous computation entity that exchanges one or more messages with a service coupled to a disparate decentralized operating system that resides in a different trust domain with a different security policy based in part on <u>a protocol specified by the service</u> and the services representing the resource perform computations on a plurality of computers linked by communication network*. Further, independent claims 27 and 35, recite similar aspect, namely, *the second service resides in a different trust domain with a different security policy compared to the first service, <u>wherein a resource is represented by multiple services</u>*. Combs, *et al.* fails to disclose these novel aspects.

Combs, *et al.* relates to a method and system that facilitates exchange of data between a user and a distributed resource allocator handling system that allocates computer resources connected to a communications network to users requesting those resources. The distributed resource allocator handling system comprises a number of resource allocator system agents, each running as a separate process on a computer connected to the network. Each resource allocator system agent maintains a database of global network resource information and constantly communicates with all other resource allocator system agents that compose the distributed resource allocator handling system to ensure that each resource allocator system agent has the same global network information. Resource allocator system agents communicate one with another using a different communications protocol. However, Combs, *et al.* fails to teach or suggest *representation of a resource as multiple services that exchange one or more messages based in part on a protocol specified by the service*. Further, Combs, *et al.* relates to an operating system (702) that is a collection of programs that provide services to application programs through the operating system call interface. The operating system call interface provides to an application program functions that the application program can invoke to read and write data to and from the hard disk, transmit data over physical data transmission networks to remote computers, print files on a printer, and other such tasks. In addition, the operating system provides and maintains a program execution environment on a computer that allows for application programs and other intermediate processes to execute in a coordinated fashion (*See*

column 7, lines 7-18). However, the cited reference does not teach or suggest a *decentralized* operating system, which is employed to orchestrate services that represent a resource, including a device, content, application or person. Further, Combs, *et al.* does not disclose a service coupled to a decentralized operating system that exchanges one or more messages with a service coupled to a disparate decentralized operating system that resides in a different trust domain with a different security policy based in part on a protocol specified by the service. In addition, the Examiner asserts on page 3 of the Final Office Action (dated September 5, 2008) that Combs, *et al.* teaches *the service including a designation primitive, a behavioral primitive that comprises a unilateral contract, and a communication primitive.* It is respectfully submitted that this assertion is incorrect since the cited portion merely indicates that the RASP (resource allocator system protocol) usage protocol specifies the acceptable order in which services may be invoked by a RASA (resource allocator system agent). However, the RASP is employed by the RASAs to communicate among themselves and synchronize their knowledge of maintained resources. Applicants' claimed subject specification, in contrast, relates to services that represent devices, content, applications, or people. Ports of services are endued with behavioral types, which are specified by the unilateral contracts. The preferred communication mechanism of the decentralized operating system is through programmatically wired ports. Wired ports are possible if the behavior type of one port (of a service) is compatible with the behavior type of another port (of another service). When ports are programmatically wired to each other, which are identifiable by URIs (uniform resource identifiers), services communicate by sending messages to each other. Simply put, unilateral contracts are expressed in a language specifying an order of messages which flow in or out of services. By the use of messages, heterogeneous resources distributed in multiple trust domains, each with its own security policy, can communicate with one another. In addition, the subject system discloses that behaviors of resources (represented by services) are expressed in unilateral contracts. For example, a file as a service can expose its behaviors through unilateral contracts. A service can be regulated by a unilateral contract. Thus, one can attach behavioral conditions to files via unilateral contracts to govern access control. Combs, *et al.* is silent with respect to these novel features.

      Combs, *et al.* does not teach or suggest representation of a resource by multiple services. In contrast, applicants' subject specification teaches that a resource, such as a hard disk, need not be represented by a single service. A composition of services can be formed representing the

resource. As an example, a hard disk can be abstracted into four different logical services. With reference to FIG. 3Q in the subject application, a controller 358 B with its unilateral contract 358 B- 2 and its port identified at a URI 358 B- 1 represents the controlling mechanism of the hard disk. A service 358 C with its unilateral contract 358 C- 2 and its port identified at a URI 358 C- 1 represents the content or the media stored on the hard disk. Further, a service 358 D and its unilateral contract 358 D- 2 and its port identified at a URI 358 D- 1 represent the power circuitry of the hard disk. The fourth service 358 A and its unilateral contract 358 A- 2 and port identified at a URI 358 A- 1 represent various physical behaviors among services 358 B- 358 D for which no messages can be sent.

Additionally, dependent claim 7 recites the decentralized operating system separates the control information from the data information in the messages when the messages are exchanged. Specifically, to enhance performance of computer systems on which decentralized operating systems run, two types of information flow are separated by the control/data plane separator. The size of control information is typically small to facilitate quick communication over the network. The size of data information is typically larger, creating greater difficulty transferring over the network. Instead of transferring data information with every communication among services across the network, the control/data plane separator allows the interpretation of data information that has been abstracted into references. These references can be described in messages as if data were present in the messages. These references can be sent along the control plane or flow, thus enhancing performance. One exemplary application is the use of such a separation in data intensive devices, such as a hard disk or a monitor display.

In view of at least the foregoing, it is readily apparent that Combs, *et al.* does not teach or suggest the subject invention as recited in claims 1, 27 and 35 (and claims 2-8, 28-34 and 36-40 that depend therefrom). Accordingly, withdrawal of this rejection is respectfully requested.

III.   Rejection of Claims 9-13 and 16-26 Under 35 U.S.C. §103(a)

Claims 9-13 and 16-26 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Combs, *et al.* (US 6,766,348) in view of Baskey, *et al.* (US 7,089,294). It is respectfully submitted that this rejection is improper for at least the following reasons. Combs, *et al.* and Baskey, *et al.*, alone or in combination, fail to teach or suggest each and every aspect of subject claims.

> *[T]he prior art reference (or references when combined) must teach or suggest all the claim limitations. See* MPEP § 706.02(j). *See also KSR Int'l Co. v. Teleflex, Inc.,* 550 U. S. ____, 04-1350, slip op. at 14 (2007). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art and not based on applicant's disclosure. *See In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

Applicant's subject claims relate to a system and method that provides a decentralized operating system (OS) that recognizes decentralized resources and coordinates the decentralized resources, local or remote, to create functionalities desired by a user. Specifically, a non-centralized mechanism is provided to orchestrate computations both at the periphery and at the core without appealing to a centralized authority. To this end, independent claim 9 recites *a first decentralized operating system executing on a computer system, which includes a first distributing kernel for designating uniform resource identifiers for a first set of services and distributing messages among the first set of services, <u>each service including a unilateral contract, the unilateral contract expressing behaviors of the service</u> and a second decentralized operating system executing on a disparate computer system coupled to the network, which includes a second distributing kernel for designating uniform resource identifiers for a second set of services and distributing messages among the second set of services, <u>each service including a unilateral contract, the unilateral contract expressing behaviors of the service, wherein a resource being represented as one or more services from the second set of services is orchestrated by the first distributing operating system</u>.* Further, independent claim 19 recites<u>, *a resource is represented by multiple services, wherein the service is an autonomous computation entity that exchanges one or more messages with a disparate service that resides in a different trust domain with a different security policy based in part on <u>a protocol specified by the service.</u>* Combs, *et al.* and Baskey, *et al.*, alone or in combination, fail to teach these novel aspects.

Combs, *et al.* relates to a system and method for exchanging data between a user and a distributed resource allocator handling system that allocates computer resources connected to a communication network to users requesting those resources. In particular, a resource allocator system agent is directly accessed by a user running on the same computer *via* an applications programming interface or by a user running on a remote computer *via* a communications

protocol. The elements of the resource allocator handling system provides an efficient load balancing mechanism that allocates resources to users on the basis of similar domain and greatest capacity. However, as discussed supra, Combs, *et al.* is silent with respect to *representing a resource, such as, a device, content, application and/or person, by multiple services,* wherein a service is an autonomous computation entity that exchanges one or more messages with another service that resides in a different trust domain with a different security policy based in part on a protocol specified by the service. Further, Combs, *et al.* does not teach or suggest a distributing kernel on one computer system that designates uniform resource identifiers for a set of services and distributes messages among the set of services, wherein, each service includes a unilateral contract, the unilateral contract expressing behaviors of the service and/or does not disclose a disparate distributing kernel executing on a disparate computer that designates uniform resource identifiers for a disparate set of services and distributes messages among the disparate set of services, wherein, each service includes a unilateral contract, the unilateral contract expressing behaviors of the service, such that, a resource being represented as one or more services from the disparate set of services is orchestrated by a the distributing kernel.

Baskey, *et al.* relates to a method and system for classifying a type of service of a communication request for an application executing on a server. Specifically, the system provides type of service classification of a communication request for an application executing on a server. The system includes a communication process executing on the server that processes communications between the server and a communication network associated with the communication request based on an associated type of service classification. However, Baskey, *et al.* does not remedy the aforementioned deficiencies of Combs, *et al.* with respect to independent claims 9 and 19.

In view of the foregoing, it is clear that Combs, *et al.* and Baskey, *et al.* alone or in combination fail to teach or suggest all aspects of claims 9 and 19 (and associated dependent claims). Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP2197US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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